

**Business Case Analysis
for
Advanced Foods Technology
(Pre-Cooked Bulk Portion Menu Items)**

**Prepared for:
The Under Secretary of the Navy**



**Prepared by:
Commander, Naval Supply Systems Command
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1. Executive Summary

1.1 Description: The use of select advanced foods by afloat units will enhance Quality of Life and reduce workload afloat by approximately 10 percent.¹ Advanced foods are defined as pre-cooked or pre-prepared bulk menu items such as pre-cooked bacon, pre-made lasagna and frozen bread dough. Since many advanced foods are more expensive than their “cook-from-scratch” counterparts, an increase in the Basic Daily Food Allowance of 6.37 percent will be required to fund the additional food cost.² The use of advanced foods supports Chief of Naval Operations’ efforts to reduce workload afloat, especially during the Inter-Deployment Training Cycle. The return on investment for this proposal is provided in the table below.

1.2 Summary Table 5-Year ROI (Cost/Savings/ROI Per Annum):

	FY 00	FY 01	FY 02	FY 03	FY 04	Total (\$M)
Total Annual Cost	5.6	11.2	11.1	11.2	11.2	50.3
Total Annual Workload Savings	8.2	16.7	17.0	17.3	17.6	76.8
Total Annual Recruiting Savings	0	14.1	14.4	14.6	14.9	58.0
Return on Investment	2.6	19.6	20.3	20.7	21.3	84.5

Return on Investment in manpower savings should be realized only after this initiative is proven on deployment and the corresponding workload reduction is validated by NAVMAC and tied to specific billets.

1.3 Benefits: Studies have demonstrated that the advantages of many advanced foods include: improved customer satisfaction, significant labor savings, a consistently higher quality food product, increased variety, reduced risk of food contamination and reduced food waste. Challenges include an increased demand for refrigerated storage, an increase in plastics/paper waste due to packaging and increased food cost. It is recommended that afloat surface units utilize approximately 40 percent advanced foods.³ Due to the unique nature of submarine operations and stowage challenges, submarines were not included as part of this study.

The increased use of advanced foods should reduce the Mess Management Specialist requirement by approximately 633 personnel for all afloat surface units.⁴ Ships are nominally manned at 90 percent of allowance. Currently, afloat units are manned at 82 percent of allowance for Mess Management Specialists.⁵ Manning level reductions allowed by this proposal would adversely impact ships if current onboard manning is reduced, vice reducing onboard allowances. For example, a Destroyer today should have 11 Mess Management Specialists (90 percent of 12), but actually has 10 onboard (82 percent of 12). Manpower reductions associated with this proposal would reduce onboard allowance

from 12 to 11. Since ships are normally manned at 90 percent of allowance, current onboard manning of 10 is appropriate from this example.

2. Background

2.1 Objectives/Scope – Detailed Description: Recent improvements in food quality and production in the commercial sector have provided an opportunity for Navy to utilize these products in afloat food service operations. As a result, multiple prototypes have been conducted to identify the advantages, disadvantages and feasibility of utilizing advanced foods in the Navy.

- The initial study at Naval Station Mayport resulted in weekly labor savings of 143 hours while feeding an average of 1437 meals, a workload reduction of 9.95 percent, the equivalent of 2.1 man-years. Food cost for this effort was 15-20 percent above the daily food allowance. Food quality and acceptability was rated as high.⁶

- Initial shipboard testing onboard USS RAINIER (AOE-7) resulted in weekly labor savings of 200 hours while feeding an average of 2439 meals, a workload reduction of 8.2 percent, the equivalent of 2.99 man-years. Food cost exceeded the daily food allowance by approximately 5-10 percent. 86 percent of the advanced food items served equaled or exceeded the quality and acceptability of their “cook-from-scratch” counterparts. Breakfast foods comprised the majority of the less acceptable items.⁷

- A subsequent test onboard USS MCFAUL (DDG-74) focused on labor savings, refrigeration requirements and plastics/paper waste. This study demonstrated weekly labor savings of approximately 146 hours while feeding an average of 1236 meals, a workload reduction of 11.8 percent, the equivalent of 2.18 man-years. Food quality for advanced foods was rated as 3.67 on a scale of 1 to 5, comparable to “cook-from-scratch” food items.⁸ Plastic and metal waste was greater than experienced with “cook-from-scratch” products and advanced foods required significant refrigerated storage space that may pose a challenge, particularly on smaller decks. Food cost for the USS MCFAUL (DDG-74) was approximately \$3 (47 percent higher) more than the daily food allowance; however, food items were provided by a food broker vice the Subsistence Prime Vendor program. Food broker costs are traditionally much higher than Subsistence Prime Vendor costs.

2.2 Implementation Components: Advanced foods will utilize existing food service equipment installed afloat. Not all advanced foods provide quality improvements or labor savings. Replacement of existing convenience foods such as canned soups, frozen/canned vegetables, canned fruits and cake mixes with advanced foods does not improve product quality or save significant amounts of labor. Refrigeration space constraints also limit the amount of advanced foods that can be carried. 100 percent usage of advanced foods is neither feasible nor desirable. Based on USS RAINIER’s (AOE-7) prototype, it has been determined that approximately 40 percent of the food served afloat should be advanced foods. This mix of advanced and traditional food items should optimize labor savings given refrigerated space constraints. Currently, 16 percent of food consumed afloat is an advanced food.⁹ A standard menu, incorporating 40 percent advanced foods, has been provided to the Fleet. Additionally, based on analysis conducted on food items utilized during past prototypes, 46 advanced foods have been identified to the Fleet for use.¹⁰ Efforts are ongoing with food suppliers,

managed by the Defense Supply Center Philadelphia, to provide an increased range and depth of advanced foods. Likewise, although 21 of 206 food items stocked by replenishment ships are advanced foods, additional items are under review for inclusion.¹¹

A funding strategy to resource investment costs has been developed in order to implement this proposal during FY 00 and to support the proposal throughout the Fiscal Year Defense Plan. CNO N1 resources the Basic Daily Food Allowance through Subsistence in Kind funding. The investment cost for FY 00 is \$5.6M. A funding requirement of \$11.2M exists for FY 01. COMNAVSUPSYSCOM has included the advanced foods requirements for FY 00 and 01 in the Subsistence in Kind President's Budget costing to BUPERS for inclusion in the MPN budget. The requested increase to the Subsistence in Kind budget will be utilized to increase the Basic Daily Food Allowance for afloat units, allowing them to increase consumption of advanced foods. COMNAVSUPSYSCOM has requested approximately \$11.2M each year, via the POM 02 Baseline Assessment Memorandum, in order to resource increased consumption of advanced foods in the outyears.

An implementation strategy has been developed in order to ensure key decisions and metrics are identified and acted upon. Assuming additional FY 00 Subsistence in Kind funding is received prior to 1 March 00, COMNAVSUPSYSCOM will increase the Basic Daily Food Allowance for afloat units for the quarter commencing 1 April 00. A series of meetings scheduled in February with the Defense Supply Center Philadelphia, Military Sealift Command, CINCLANTFLT, CINCPACFLT and Type Commanders will develop a plan to increase the availability of advanced foods worldwide. An educational program, designed to familiarize afloat units with the advantages of advanced foods will be conducted via Naval message, professional publications and hand's on training onboard ships by Navy Food Management Teams. Training teams will consist of senior Mess Management Specialists, Registered Dietitians and civilian chefs. Training will focus on utilizing advanced foods and nutrition. A cooperative effort between COMNAVSUPSYSCOM and the Fleet will be undertaken to ensure increased utilization of advanced foods. Training will first be conducted for all CVNs and "L" Decks during FY 00 due to the volume of subsistence consumed on these decks. On a monthly basis, starting 1 July, COMNAVSUPSYSCOM will provide Type Commanders a report detailing the amount of advanced food consumed by each platform. Although a goal of consuming 40% advanced foods has been set, the measure of success for this proposal will be a trend of consistently increasing consumption of advanced foods.

3. Benefits

3.1 Summary List: Potential benefits will include:

- Consistently higher quality food products
- Reduced workload for food preparation and clean up
- Ability to provide increased variety of food items
- Reduced risk of food contamination
- Reduced food waste

3.2 Individual Benefit Description

3.2.1 Consistently Higher Quality Food Products: Advanced foods provide a quality product each time, regardless of who is preparing the meal or any other external factors. High quality products available from the commercial sector provide a boost to morale for our afloat Sailors that cannot consistently be achieved by the “cook-from-scratch” method. High approval ratings, 3.87 on a scale of 1 to 5 for USS MCFAUL’s (DDG-74) use of advanced foods, demonstrate empirically that Sailors like these products.¹²

3.2.2 Reduced Workload for Food Preparation and Clean Up: Many advanced foods have shorter preparation times. These items are pre-cooked or pre-made, requiring only preheating before serving. Time spent preparing and mixing the ingredients is eliminated. Preparation of the food item is often as simple as removing it from the reefer, warming it and placing it on the serving line. Since the items are pre-cooked, there are less pans and utensils to clean. Also, many advanced foods are already pre-packaged in aluminum or plastic serving containers, eliminating the cleaning of serving pans. More plastic and metal waste will be generated by use of advanced foods. Increased use of advanced foods inport may lead to more food deliveries by contractors, impacting overall cost of the “Contractor Loadout of Stores” proposal.

3.2.3 Ability to Provide Increased Variety of Food Items: The labor intensive nature of “cook from scratch” products precludes many galleys from offering more than two entrées. Some food items such as lasagna are rarely produced due to the amount of labor associated with this product. The use of “heat and serve” advanced foods allows food service operations to offer a multitude of entrées. USS TRUMAN (CVN-75) utilizes over 30 percent advanced foods and currently offers at least 13 separate entrées during lunch and dinner.¹³ Several other ships are utilizing advanced food entrées for the evening meal inport and are offering a choice of 11-15 different meals.¹⁴ This level of variety would be unachievable without the use of advanced foods. The positive impact on morale is significant.

3.2.4 Reduced Risk of Food Contamination: Proper use of advanced foods can improve food safety. Preparation of advanced foods is conducted under strict sanitary conditions, including microbiological testing. Many advanced foods are frozen, reheated and served in a very short time span, providing less opportunity for food contamination and resultant food borne illness. Additionally, since the use of advanced foods encourages chefs to cook on demand, there are fewer leftovers. Leftovers pose one of the greatest threats to food safety due to the difficulty in maintaining safe storage and serving temperatures.

3.2.5 Reduced Food Waste: A waste generation study onboard USS MCFAUL (DDG-74) demonstrated a 15 percent reduction in food waste when utilizing advanced foods.¹⁵ Since the products are “heat and serve,” the use of advanced foods allows chefs to aggressively practice progressive cookery by heating smaller quantities of food more often. This reduces the need to prepare large quantities of a product which may not all be consumed, resulting in leftovers.

4. Associated Cost Savings

The savings associated with increased use of advanced foods consist of tangible and intangible savings. Tangible savings can be quantified accurately. Intangible savings are considered as those either impossible to quantify or beyond the scope of this analysis.

4.1 Tangible Savings

4.1.1 Workload Reduction (\$16.7M annual savings): Approximately 23M meals are served annually in our surface fleet.¹⁶ Based on a 67 hour workweek and extending those savings to all surface afloat units, the result is a reduction in workload equating to 633 personnel afloat-wide.¹⁷ This workload reduction applies to food preparation and cleaning only and does not include other shipboard responsibilities such as watchstanding, General Quarters Stations, training, etc. For purposes of this proposal the personnel impacted were assumed to be at the E-2 paygrade with an FY 00 composite standard pay and reimbursement rate of \$26,250 per year.¹⁸

4.1.2 Training Reduction (\$14.1M annual savings): A reduction in workload results in a requirement for 633 less Mess Management Specialists afloat. This allows Navy to recruit and train fewer personnel. The recruiting cost per Sailor is approximately \$8.3K. Recruit training cost is \$6.6K. The cost for Mess Management Specialist “A” school is \$6.7K. Additionally, Permanent Change of Station costs to move a Sailor through the training pipeline to their first ship is approximately \$500. Therefore, the total recruiting and training cost to deliver a trained Mess Management Specialist to the Fleet is approximately \$22K.¹⁹

4.2 Intangible Savings

4.2.1 Quality of Life Impact: Food service is arguably the #1 morale driver afloat. Any improvements in food service through use of advanced foods will result in improved morale and Quality of Life for Sailors. Reduced workload will also improve Quality of Life for Food Service Personnel.

4.2.2 Retention: Improved Quality of Life resulting from the use of advanced foods will improve the overall afloat experience for Sailors and may improve retention. Though few Sailors would reenlist due to outstanding food in Navy, a less than outstanding food service operation may be just one more reason not to reenlist.

4.2.3 Food Safety: Use of advanced foods will improve food safety by reducing the opportunity for food borne illness. Loss of production associated with food borne illness could be avoided.

4.2.4 Operations and Sustainment Savings: Though beyond the scope of this analysis, Operations (fuel/electric and any other costs associated with ship/equipment operation) and Sustainment (maintenance costs, etc.) savings will result through reduced steam, electricity, and equipment requirements by serving pre-prepared food vice “cook from scratch.”

5. Cost to Implement

5.1 Proof of Concept Costs (Prototypes): There are no proof of concept costs. Prototypes have already been funded and conducted.

5.2 Deployed Systems Costs (Fleet-Wide Implementation): The estimated cost for deployment of advanced foods is as follows:

FY 00	\$ 5.6M
FY 01	\$11.2M
FY 02 and beyond	\$11.2M

This estimate is based upon converting 40 percent of afloat traditional menu items to advanced foods commencing 1 April 99. This requires an increase in the Basic Daily Food Allowance of 6.37 percent over existing funding. The Basic Daily Food Allowance is a sub-element of the MPN appropriation.

6. Conclusions

6.1 Short Summary of Benefits: Based on the methodology applied in this analysis, Navy will obtain a significant amount of savings through increased usage of advanced foods. Improved Quality of Life and reduced workload will constitute the primary benefits.

6.2 Assumed Cumulative Implementation Plan:

FY 1999	16% (Advanced foods consumed)
FY 2000 and beyond	40% (Advanced foods consumed)

6.3 Total Costs Savings over 5-Year Period: Using the estimated implementation costs and potential savings, an estimated total savings of \$84.5M is forecast for a five-year period. In addition to these savings, Quality of Life, retention, and food safety will also be positively impacted.

An estimated total savings of \$84.5M is forecast for a five-year period.

- Attachment 1: BDFA & Workload Savings Calculations
- Attachment 2: USS RAINIER Prepared Foods Prototype Final Report
- Attachment 3: Flag Conference Pitch November 1999
- Attachment 4: NAVSTA Mayport Prepared Foods Position Paper
- Attachment 5: USS MCFAUL Advanced Food Study
- Attachment 6: Ship Class Summary Advanced Foods Q4 Rev
- Attachment 7: 6 Advanced Foods Messages to the Fleet
- Attachment 8: Cargo Report June 1999
- Attachment 9: USS FITZGERALD (DDG 62) Pre-prepared Dinner Report (Suppo/LT Maynes)
- Attachment 10: USS MCFAUL Waste Study
- Attachment 11: Rations per Ship Type
- Attachment 12: OPNAV Instruction 1000.16J (Appendix C to Enclosure 1)
- Attachment 13: Military Composite Standard Pay and Reimbursement Rates
- Attachment 14: NAVPERS Email of 16 December 1999

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- ¹ Based upon average workload savings demonstrated during NAVSTA Mayport, USS RAINIER and USS MCFAUL Advanced Food Studies. Provided as Sheet 1, Attachment 1.
 - ² 39 Ships utilized an average of 27 percent advanced foods during FY 99 Q4. Cost per ration (excluding special allowances) for these ships averaged 4.3 percent above the Basic Daily Food Allowance. Since use of 27 percent advanced foods cost 4.3 percent above BDFA, use of 40 percent would cost 6.37 percent above BDFA. Provided as Sheet 2, Attachment 1.
 - ³ USS RAINIER study demonstrated that afloat units, at least as large as AOE's, can successfully stock and utilize approximately 40 percent advanced foods. RAINIER supported advanced foods while participating in RIMPAC and during a 6 month Gulf deployment. Provided as Attachment 2.
 - ⁴ Based on annual workload reduction of 22,224,605 hours computations provided as Sheet 3, Attachment 1.
 - ⁵ Manning figures provided by CINCLANTFLT N412 on 2 December 1999. Provided in Attachment 3.
 - ⁶ NAVSTA Mayport study provided in Attachment 4.
 - ⁷ Synopsis of USS RAINIER study provided in Attachment 2.
 - ⁸ USS MCFAUL Advanced Food Study provided in Attachment 5, Page 7.
 - ⁹ Based on analysis by SUP 51 of STORES Consumed for Q4 FY 99. Provided as Attachment 6.
 - ¹⁰ Provided as Attachment 7.
 - ¹¹ 21 of 206 food items stocked by replenishment ships are advanced foods. Provided as Attachment 8.
 - ¹² USS MCFAUL Advanced Food Study provided in Attachment 5, Page 7.
 - ¹³ Provided as Sheet 11, Attachment 6.
 - ¹⁴ USS FITZGERALD (DDG 62) Pre-prepared Dinner Report (Suppo/LT Maynes). See Attachment 9, Pages 9-10.
 - ¹⁵ USS MCFAUL 15 percent reduction in food waste. Provided in Attachment 10, Pages 7-8.
 - ¹⁶ Attachment 11, column 3 provides computations for rations per ship type.
 - ¹⁷ OPNAV Instruction for a 67 hour work week. See Attachment 12, Appendix C, Page 3.
 - ¹⁸ Attachment 13 provides FY 00 Military Composite Standard Pay and Reimbursement Rates.
 - ¹⁹ Provided by NAVPERS N132D15 email of 16 December 1999. Provided as Attachment 14.